

REMARKS

Claims 1, 3-22, 24, 25 and 27-29 are pending in the present Application. In the June 7, 2004 Office Action, claims 1, 3, 4, 6, 7, 9, 10, 28 and 29 are rejected under 35 U.S.C. 102(e) and claims 5, 8, 11-22, 24, 25 and 27 are rejected under 35 U.S.C. 103(a). In response to the Office Action, Applicant is amending claims 1, 12, 20, 22 and 28. No new matter has been added.

Rejection under 35 U.S.C. § 102

In paragraph 3 of the Office Action, claims 1, 3, 4, 6, 7, 9 and 10 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,664,959 to Duluk, Jr. et al. (hereinafter, “Duluk”). In response the Office Action, Applicants are amending claim 1 to recite “a plurality sequential logic circuits coupled in series . . . each of the sequential logic circuits and each of the parallel logic circuits configured to receive a **different polygonal portion** of the raster image and to determine whether the received polygonal portion is at least partly inside the graphics primitive.” (emphasis supplied) In contrast to amended claim 1, Duluk does not teach or suggest such a structure or combination of structure.

In paragraph 4 of the Office Action, the Examiner states that “Duluk teaches a pipeline structure having the sequential processing including the sequential logic circuits formed by the circuit blocks such as Subrasterizer 9052, Column Selection 9054 and Sample Z Buffer 9055 . . .” The Subrasterizer 9052 disclosed in Duluk functions to “determine the final potentially visible stamp set in a stamp row.” (Duluk at Col. 36, lines 12-50) “For each row, the stamp set is sent to the Column Selection block 9054 of the Stamp Selection Logic unit 9008.” (Duluk at Col. 36, lines 50-52) As further disclosed in Duluk, “[t]he Column Selection unit 9054 . . . tells the Z Cull unit 9012 which stamp to process in each clock cycle.” (Duluk at Col. 37, lines 10-12) “The Sample Z Buffer unit 9055 stores all the data for each sample in a tile, including the z value for the each sample, and all the sample FSM state bits.” (Duluk at Col. 37, lines 18-20).

In contrast to Duluk, amended claim 1 requires that each sequential logic circuit is configured to determine whether a different polygonal portion (e.g., stamp) of a raster image is at least partly inside a graphics primitive. Stated differently, each sequential logic circuit in the series of sequential logic circuits recited in claim 1 can determine whether a different polygonal portion of a raster image is at least partly inside a graphics primitive.

In contrast to amended claim 1, the Subrasterizer 9052 disclosed in Duluk does not determine whether a polygonal portion (e.g. a stamp) of a raster image is at least partly inside a graphics primitive, nor does the Column Selection block 9054 or the Sample Z Buffer unit 9055. Moreover, the combination of the Subrasterizer 9052, Column Selection block 9054, and the Sample Buffer 9055 disclosed in Duluk does not function to determine whether a polygonal portion (e.g., a stamp) of a raster image is at least partly inside a graphics primitive. For at least the above reasons, Applicant asserts that amended claim 1 is allowable. Because claims 3, 4, 6, 7, 9 and 10 depend either directly or indirectly from claim 1, Applicant asserts that claims 3, 4, 6, 7, 9 and 10 are allowable for at least the same reasons stated above for claim 1.

In paragraph 5 of the Office Action, claims 28 and 29 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,480,205 to Greene et al. (hereinafter, “Greene”). In response to the Office Action, Applicants are amending claim 28 to recited “a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile.” Although the Examiner states in paragraph 12 of the Office Action that “Greene teaches implicitly a reference frame located at a geometric center of the tile” (emphasis supplied), Applicant asserts that Greene does not explicitly or implicitly teach, or suggest, “a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile.”

Greene explicitly teaches that “[t]he origin of the coordinate frame is located at the tile’s lower-left corner 1002” (Greene at Col. 14, lines 26-27). Further, Greene explicitly teaches that “[e]ach tile in the z-pyramid has an associated coordinate frame positioned and scaled relative to that tile as illustrated in FIG. 10. For example, FIG. 2 shows the coordinate reference frames (e.g. 222, 224) of the eight 4x4 tiles that would be traversed during hierarchical tiling of the triangle 214.” (Greene at Col. 14, lines 38-42) A careful review of FIG. 10 disclosed in Greene shows a coordinate reference frame 1004 associated with a tile 1000, which is located at the tile’s lower-left corner 1002. Similarly, a careful review of FIG. 2 disclosed in Greene shows a coordinate reference frame 224 associated with the tile 220, which is located at the tile’s lower-left corner. Greene does not, however, explicitly disclose “a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile.” Whether a coordinate reference frame of a tile is at the geometric center of another tile is irrelevant to the geometric relationship between a given tile and the coordinate frame of the given tile.

Applicant further asserts that Greene does not implicitly teach or suggest “a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile.” As discussed hereinabove, Greene discloses that a tile’s coordinate frame is located at the tile’s lower-left corner 1002. (Greene at Col. 14, lines 26-27) The coordinate reference frame of another tile is irrelevant to the geometric relationship between a tile and that tile’s coordinate reference frame. Importantly, a tile’s coordinate reference frame can not be simultaneously located at both the tile’s lower-left corner and the geometric center of the tile. For at least these reasons, Applicant asserts that Greene does not implicitly teach or suggest “a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile.”

Assuming arguendo that Greene implicitly teaches “a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile” as recited in claim 28, Applicant asserts that Greene does not anticipate claim 28 of the present invention because this claim limitation recited in claim 28 is not inherently present in Greene. Under 35 U.S.C. § 102, a prior art reference must teach every claimed feature of the invention, either explicitly or implicitly, to anticipate a claimed invention. Any feature of the claimed invention not explicitly disclosed in the reference must be inherently present in the reference to anticipate the claimed invention. See In re King, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986) (“Under principles of inherency, if a structure in the prior art necessarily functions in accordance with the limitations of a process or method claim of an application, the claim is anticipated” (emphasis supplied)); Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1473, 43 USPQ2d 1481, 1490 (Fed. Cir. 1997) (“For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art.”) As discussed hereinabove, Greene teaches that a coordinate reference frame of a tile is located at the tile’s lower-left corner 1002. (Greene at FIG. 10; Col 14, lines 26-27) Therefore, Greene does not require “a coordinate reference frame of a tile in the raster image, the coordinate reference frame located at a geometric center of the tile” as is recited in claim 28, and thus this claim limitation is not inherently present in Greene. Accordingly, Applicant asserts that Greene does not anticipate claim 28 of the present invention.

For at least the above reasons, Applicant asserts that amended claim 28 is allowable. Because claim 29 depends directly from claim 28, Applicant asserts that claim 29 is allowable for at least the same reasons stated above for claim 28.

Rejection under 35 U.S.C. § 103

In paragraph 7 of the Office Action, claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Duluk, in view of Greene. In paragraph 8 of the Office Action, claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Duluk, in view of Greene. Claims 5 and 8 depend either directly or indirectly from amended claim 1, and thus include each and every claim limitation recited in amended claim 1. As discussed hereinabove, Duluk does not teach or suggest “a plurality sequential logic circuits coupled in series . . . each of the sequential logic circuits and each of the parallel logic circuits configured to receive a different polygonal portion of the raster image and to determine whether the received polygonal portion is at least partly inside the graphics primitive” as is recited in amended claim 1. The addition of Greene to Duluk does not remedy this deficiency. Accordingly, Applicant asserts that claims 5 and 8 are not *prima facie* obvious in light of amended claim 1 and are therefore allowable.

In paragraph 9 of the Office Action, claim 11 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Duluk, in view of U.S. Patent No. 6,359,623 to Larson. (hereinafter, “Larson”). Claim 11 depends directly from claim 1, and thus includes each and every claim limitation recited in claim 1. As discussed hereinabove, Duluk does not teach or suggest “a plurality sequential logic circuits coupled in series . . . each of the sequential logic circuits and each of the parallel logic circuits configured to receive a different polygonal portion of the raster image and to determine whether the received polygonal portion is at least partly inside the graphics primitive” as is recited in amended claim 1. The addition of Larson to Duluk does not remedy this deficiency. For at least the above reasons, Applicant asserts that claim 11 is not *prima facie* obvious in light of amended claim 1 and is therefore allowable.

In paragraph 10 of the Office Action, claims 12-22, 24, 25 and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Larson, in view of Greene. In response to the Office Action, Applicants are amending claims 12, 20, and 22. Amended claims 12 and 20 now recite, “determining whether a polygonal portion of the raster image is at least partly inside the graphics primitive by using a coordinate reference frame of the polygonal portion, the coordinate reference frame located at a geometric center of the polygonal portion.” Amended claim 22 now recites, “defining a coordinate reference frame for the tile, the coordinate reference frame located at a geometric center of the tile.”

In regard to claim 12, the Examiner states in paragraph 11 that “Greene teaches implicitly a reference frame located at a geometric center of the tile. (See Figure 2 of Greene wherein any reference frames can be chosen and therefore the geometric center of the tile 210 can be chosen for a reference frame of the tile located in the left of the tile 220.” Although Fig. 2 of Greene may show a coordinate frame of one tile located at the geometric center of another tile, the coordinate frame of the one tile is not the coordinate frame of the other tile. As discussed further herein in relation to claims 28 and 29 in the section entitled “Rejection under 35 U.S.C. § 102”, Greene explicitly discloses that a tile’s coordinate frame is located at the tile’s lower-left corner 1002. (Greene at Col. 14, lines 26-27) Importantly, a tile’s coordinate frame cannot be simultaneously located at both the tile’s lower-left corner and at the geometric center of the tile. In this respect, Greene teaches away from a coordinate reference frame of a tile that is located at a geometric center of that tile.

Also in paragraph 11, the Examiner states that “[i]t is therefore clear that Greene teaches in Figures 2 and 15 and column 22 the translation between the coordinate frame of the tile 210 and the coordinate reference frame of the small tile on the left of the tile 220 as can be seen in Figures 2 and 15.” A careful reading of column 22 and a careful review of Figs. 2 and 15 disclosed in Greene indicates that the coordinate frame 222 (x and y) of tile

210 is translated and scaled to determine the coordinate reference frame 224 (x' and y') of tile 220. The coordinate frame 224, however, is not the coordinate frame of tile 210. Instead, tile 210 has only one coordinate frame 222, which is the coordinate frame produced by transforming and scaling the coordinate frame 224. Although the above arguments discuss tile 220 and coordinate frame 224, these arguments apply equally to the tile located immediately to the left of tile 220 as disclosed in FIG. 15 of Greene. Stated explicitly, the coordinate frame of the tile immediately to the left of the tile 220 as disclosed in FIG. 15 of Greene is not the coordinate frame of the cell 210. As explicitly disclosed in Greene, the coordinate frame of each tile is located at the lower-left corner of that tile. (Greene at Col. 14, lines 26-27) In contrast to Greene, amended claim 12 requires “determining whether a polygonal portion of the raster image is at least partly inside the graphics primitive by using a coordinate reference frame of the polygonal portion, the coordinate reference frame located at a geometric center of the polygonal portion.” For all the above reasons, Applicant asserts that claim 12 is allowable. Because claims 13-19 depend either directly or indirectly from claim 12, Applicant asserts that claims 13-19 are allowable for at least the same reasons stated above for claim 12.

In regard to claim 20, the Examiner states in paragraph 11 of the Office Action, that “claim 20 encompasses the same scope of invention as that of claim 12 except additional claimed limitation of an electronic readable medium having embodied thereon a program.” As discussed hereinabove, amended claim 20 now recites “determining whether a polygonal portion of the raster image is at least partly inside the graphics primitive by using a coordinate reference frame of the polygonal portion, the coordinate reference frame located at a geometric center of the polygonal portion.” Because this claim limitation is the same claim limitation as now recited in amended claim 12 and discussed hereinabove in relation to claim 12, Applicant asserts that claim 20 is allowable for at least the same reasons stated above for

claim 12. Because claims 21 and 27 depend directly from claim 20, Applicant asserts that claims 21 and 27 are allowable for at least the same reasons stated above for claim 20.

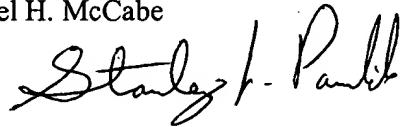
In regard to claim 22, the Examiner states in paragraph 12 of the Office Action that “Greene teaches implicitly a reference frame located at a geometric center of the tile (See Figure 2 of Greene wherein any of the reference frames can be chosen and therefore the geometric center of the tile 210 can be chosen for a reference frame of the tile located in the left of the tile 220.” As discussed hereinabove in relation to claim 12, Greene explicitly discloses that the coordinate reference frame of a tile is located at the lower-left corner of the tile. (Greene at Col. 14, lines 26-27) Therefore, the coordinate frame of the tile to the immediate left of tile 220 as disclosed in FIG. 15 of Greene is not the coordinate reference frame of the tile 210. Instead, the coordinate frame of the tile 210 is the coordinate frame 222. In contrast to Greene, amended claim 22 requires “defining a coordinate reference frame of the tile, the coordinate reference frame located at a geometric center of the tile.” For all the above reasons, Applicant asserts that claim 22 is allowable. Because claim 24 and 25 depend directly from claim 22, Applicant asserts that claims 24 and 25 are allowable for at least the same reasons stated above for claim 22.

CONCLUSION

Based on the foregoing remarks, Applicant believes that the rejections in the June 7, 2004 Office Action are fully overcome, and that the Application is in condition for allowance. If the Examiner has questions regarding the case, the Examiner is invited to contact Applicant's undersigned representative at the number given below.

Respectfully submitted,

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